

CLAIMS

1. An altitude protection device for members of the crew of high-performance aircraft as a supplement to an acceleration protection suit according to the hydrostatic principle (G-suit (1)), which comprises a high-strength stretch-resistant woven textile fabric, comprising liquid-filled veins (6) that extend essentially along the entire length of the G-suit (1), characterised in that they comprise:
 - at least one tension pocket (2) made from a textile fabric with characteristics that are comparable to those of the G-suit (1), which tension pocket (2) at least along both edges that extend essentially so as to be perpendicular to the direction of tension is in a non-positive way connected to said G-suit (1) so that inflation of the pocket (2) leads to a reduction in the distance of these vertical connections;
 - in each case at least one gas-proof bladder (4) for each tension pocket (2), comprising an elastic plastic material;
 - at least one pressure pocket (3) made of a stretch-resistant textile fabric, which pressure pocket (3) is attached on the inside on the G-suit (1) along a line that is arranged so as to be perpendicular on the direction of tension so that inflation of the pressure pocket (3) does not result in any significant change in the circumferential tension of the G-suit (1); and

- in each case at least one gas-proof bladder (4) for each pressure pocket (3), comprising an elastic plastic material.
2. The altitude protection device according to claim 1, characterised in that the bladders (4), of which there are at least two, comprise a knitted distance fabric (5), which allocates to them a predetermined minimum volume even under mechanical load.
 3. The altitude protection device according to claim 2, characterised in that there is precisely one tension pocket (2) with one bladder (4), which tension pocket (2) is attached to the back piece of the G-suit (1) in such a way that it comes to rest between the veins (6) that extend on the rear of the G-suit (1), and that there are precisely two pressure pockets (3), each with a bladder (4), attached in the stomach region on the inside of the G-suit (1).
 4. The altitude protection device according to any one of claims 1 to 3, characterised in that the tension pocket (2), of which there is at least one, at sea level is partly filled by the bladder (4) arranged inside it, and thus the bladder (4) when the ambient pressure decreases first fills in the volume of the tension pocket (2) before its expansion leads to a significant increase in the circumferential tension of the G-suit (1).
 5. The altitude protection device according to any one of claims 2 to 4, characterised in that at least one bladder (4) comprises at least one bridge (7), which,

when the bladder (4) is subjected to increased pressure, delays the expansion of said bladder (4) in the bridge plane.

6. The altitude protection device according to any one of claims 1 to 5, characterised in that the tension pocket (2), of which there is at least one, and the bladder (4) contained therein are dimensioned such that the tension pocket (2) significantly contributes to an increase in the circumferential tension of the G-suit (1) only from an atmospheric pressure that corresponds to an altitude of between 5,500 metres above sea level to 7,600 metres above seal level.
7. The altitude protection device according to any one of claims 1 to 6, characterised in that the tension pocket (2), of which there is at least one, and the pressure pocket (3) of which there is at least one, as well as the bladders (4) contained therein, are dimensioned such that the tension pockets (2) essentially attain their maximum volume from an atmospheric pressure which corresponds to the maximum operational altitude of the aircraft.
8. The altitude protection device according to any one of claims 1 to 7, characterised in that at least one bladder (4) is connected to an additional volume arranged outside the G-suit (1), wherein, when the ambient pressure drops, this additional volume remains constant from the point of reaching a predefined ambient pressure, and, furthermore, the quantity of gas contained therein essentially contributes entirely to building up tension in the bladder (4).

9. The altitude protection device according to claim 8, characterised in that the additional volume arranged outside the G-suit (1) comprises an additional elastic bladder (9) that is accommodated in an additional pocket (10) made from a stretch-resistant textile fabric, and comprises a line (8), wherein the line (8) connects the additional bladder (9) with the bladder (4).
10. The use of an altitude protection device according to any one of claims 1 to 9 as altitude protection for crew members of high-flying aircraft.